



# Illinois Department of Natural Resources

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<http://dnr.state.il.us>

Pat Quinn, Governor  
Marc Miller, Director

February 23, 2012

Mr. Robert Abney, Superintendent  
Waltham School District #185  
946 N. 33<sup>rd</sup> Road  
Utica, IL 61373-9622

**RE: Small Wind Turbine Project, LaSalle County  
Endangered Species Consultation Program  
EcoCAT Review #1209335**

Dear Superintendent Abney:

The Department has received a submission from your District's consultants/vendors involved with this proposal for the purpose of consultation in accordance with the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075. The proposal entails the construction and operation of one or more small wind turbines at the District's campus on 33<sup>rd</sup> Road, in Township 34 North, Range 2 East, Section 22.

It is the biological opinion of the Department the proposed action is unlikely to adversely modify the essential habitat of the endangered **Indiana Bat**, *Myotis sodalis*. However, for the reasons detailed below, there is a substantial risk this opinion is incorrect. Consequently, the Department is making a recommendation to the District, a step normally taken only when adverse modification of habitat is deemed likely.

This location lies approximately 5.5 miles northeast of the Black Ball Mine in the Pecumsaugan Creek Nature Preserve. The Black Ball Mine is the only federally-designated Critical Habitat in Illinois for the Indiana Bat, and the only known hibernaculum for this species in Central Illinois. In recent years, approximately 2,500 Indiana Bats hibernate there. In the spring and summer, most of these bats will disperse significant distances, up to 300 miles, before returning in the fall. However, an unknown fraction of this population remains in the vicinity of the Mine all year.

Unlike true cave bats, which always roost in caves or mines, the Indiana Bat spends its active periods roosting in trees. Pregnant females form maternity colonies, which may share several different roost trees in close proximity, while males, non-reproductive females, and juveniles form so-called "bachelor" colonies which use alternate roost sites. A characteristic shared by all roost trees is that they possess areas of exfoliating bark, beneath which the bats seek daytime protection; most roost trees also exhibit significant exposure to solar radiation. Dead, diseased, or damaged trees are often selected. Although much of the literature suggests this species prefers

forest environments, in Illinois it is not unusual for this species to select roost trees which are solitary or occur on the edges of larger woods.

Like most bats, the Indiana Bat is insectivorous and frequents locations where insects are abundant. The open areas along roads or streams formed by tree canopies provide good foraging, as do isolated ponds and wetlands and, under the right conditions, open fields. In general, the Indiana Bat is thought to generally remain within 1,000 feet of forested areas or tree-lines and to avoid crossing extensive open areas, but these are generalizations or rules-of-thumb and numerous exceptions can be cited. Likewise, lactating females are thought to generally forage within 2.5 miles of their roost trees, but this is an “average” figure, and cases of more distant single-night ranging have been reported.

The Middle School campus is located less than 0.4 miles north of the main stem of Pecumsaugan Creek and less than 0.2 miles from a tributary west of the campus. Several ox-bow meanders exist along Pecumsaugan Creek in this vicinity, while a large farm pond, surrounded by mature trees, is located just 0.4 miles northwest of the campus. A pasture/savanna copse of trees exists less than 0.2 miles south-southeast of the campus, adjacent to the tributary stream. Dense stands of trees along Pecumsaugan Creek do not occur for a distance of nearly three miles. Thus, the local landscape offers a juxtaposition of attractive and unattractive features which makes a definitive opinion on the presence of the Indiana Bat difficult to derive.

In general, this landscape may appear unfavorable for hosting the Indiana Bat, but this area has not been extensively surveyed for this species in the summer. Moreover, bats which are migrating may use habitats they would not prefer during normal “resident” activities and this potential must be considered.

It is likely the school building or grounds are lit at night for security. As all know, lights attract insects, and brighter lights on taller poles or standards concentrate insects from a wide area. These concentrations attract insect predators, bats among them. The presence of other bat species is virtually assured. Consequently, while the presence of the Indiana Bat might be deemed unlikely at the Middle School Campus, it cannot be ruled out.

During spring and summer residency, most Indiana Bat activity occurs relatively close to the ground, with only 3% of the activity being as high as 150 feet. During migration, however, activity occurs at higher altitudes than otherwise. Although most of this activity occurs below 70 feet, turbine rotors set at this height are likelier to strike a bat than those set above 100 feet.

The rotor diameter of a Skystream 3.7 is just over 12 feet (3.7 meters). This is miniscule compared to the diameters of utility-scale wind turbines, and this small swept area is often cited as a reason for reduced estimates of bird and bat mortality. However, the rated rotational speed of this machine is 330 rpm, which means blade tips pass a given point more than 16 times in a second; this allows only 0.06 seconds for a bird or a bat to pass through the rotor plane unharmed, if the passage is perfectly timed. The reality is that any bird or bat transiting the rotational plane when the machine is operating at rated speed is unlikely to survive. For larger utility scale machines, this “passage gap” may extend between one and three seconds, greatly lessening the chance of a strike. Thus, the smaller rotor diameter of this machine poses less risk

of an encounter with a bat, but its operational speed offers a near-certainty of a fatality should an interaction occur, while its height above ground level also increases the risk of an encounter.

Larger turbines are well-known to kill significant numbers of bats and birds. Despite the representations of small turbine manufacturers, the fact remains that virtually no scientific studies of bird and bat mortality have been made for turbines in this size class. Given the significant differences in operational characteristics and the typical settings in which turbines are found, applying the results of utility-scale turbine studies to turbines of this size is unjustified.

For smaller wind turbines, a premium is placed on low wind-speed operation, since lower wind speeds predominate in the locations and at the altitudes such machines are normally placed in service. The cut-in speed for the Skystream is 3.5 m/s; bats frequently remain active until wind speeds approach 6.5 m/s or more, producing a significant overlap when both wind turbines and bats are active. At this time, operators of utility-scale machines are often asked to halt operations below 6.5 m/s, which can produce a 50%-80% reduction in bat fatalities with only an average 1% reduction in power generated. But the loss of generated power would be much greater for a machine intended to generate most of its useful power at lower wind speeds and, since no average rate of mortality has been established for machines in the Skystream class, it is impossible to estimate the reduction in mortality that curtailment of operations at low wind-speeds might produce. Hence it is unclear whether operational curtailment is a viable method of bat mortality reduction for small wind turbines.

Bats other than the Indiana Bat are likely present on and near the campus and will be placed at risk through operation of this machine. One of these, the **Northern Long-Eared Bat** (a.k.a. Northeastern Myotis), is currently being evaluated by the U.S. Fish & Wildlife Service for listing as an endangered species. The **Big Brown Bat**, the **Little Brown Bat**, and the **Tricolor Bat**, as well as the Northern Long-Eared Bat, are all vulnerable to White-Nose Syndrome, a fungal infection recently responsible for the deaths of millions of bats in the eastern United States. These species are also all documented as wind-turbine kills at commercial wind farms. Due to White-Nose Syndrome, one or more of these species may receive endangered or threatened status sometime during the life of the wind turbine owned by the District. When that occurs, it will be important for the District to be aware of potential liability and to be able to address it effectively.

The Department makes the following recommendations.

*Recommendation #1.* The wind turbine(s) should be located as far from security lighting as physically possible within the limits of the property and any required setbacks. (If there is any question whether bats are present in the area, observations of activity near the security lighting should provide an answer.) If turbine placement is constrained, it may be easier to re-locate or modify security lighting.

*Recommendation #2.* The District should develop and implement a bird/bat mortality monitoring program to determine the frequency and extent of bird/bat losses due to operation of the wind turbine(s). Such a program can be performed in conjunction with any renewable energy or science curriculum adopted by the District, and may include student participation. (The only

requirement is that faculty/staff supervising those involved in locating and handling any wildlife possess the required scientific research permit from the Department.) Recovered specimens should be preserved for later expert identification. The Department is willing to assist in the development of an appropriate protocol.

*Recommendation #3.* Should an endangered or threatened species be recovered, the Department should be promptly notified and operation of the turbine(s) suspended until an appropriate course of action can be determined.

Consultation on the part of the Department is terminated, unless additional information or advice related to this proposal is desired. In accordance with 17 Ill. Adm. Code 1075.40(h), Waltham School District #185 must notify the Department of its decision regarding these recommendations, whether it will:

- Proceed with the action as originally proposed;
- Require the action to be modified per Department recommendations (please specify which measures if not all will be required); or
- Forgo the action.

This consultation is valid for two years unless new information becomes available which was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action. Please contact me if you have questions regarding this review.

Sincerely,



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cc: Matt Stafford, LaSalle County Environmental Services and Land Use  
Michelle Simone, IDNR/Region1/Natural Heritage